

REMARKS

Claims 1-14 are all the claims pending in the application. By this Amendment, Applicant editorially amends claims 1, 3, 6, and 8-10. The amendments to these claims were made for reasons of precision of language and consistency, and do not narrow the literal scope of the claims and thus do not implicate an estoppel in the application of the doctrine of equivalents. The amendments to claims 1, 3, 6, and 8-10 were not made for reasons of patentability.

I. Preliminary Matters

As a preliminary matter, Applicant thanks the Examiner for accepting the drawings. Applicant also thanks the Examiner for acknowledging all claims to foreign priority. The Examiner, however, failed to indicate that a certified copy of the priority document was received. Applicant respectfully requests the Examiner to acknowledge the receipt of the certified copy of the priority document filed on January 28, 2002.

In addition, the Examiner indicated on Form PTOL-326 that the specification is objected to. The Examiner, however, failed to indicate any reasons for objecting to the specification in the Detailed Action. Therefore, Applicant respectfully requests the Examiner to withdraw this objection to the specification or to indicate reasons for objecting to the specification.

Finally, Applicant thanks the Examiner for initially all of the references listed on form PTO/SB/08 A & B submitted with the Information Disclosure Statement filed on January 28, 2002. The Examiner, however, crossed out three references on form PTO/SB/08 A & B submitted with the Information Disclosure Statement filed on January 8, 2004. In particular, the Examiner alleged that Applicant did not include concise explanation of the relevance for the

three foreign references JP 2000-235400, JP 11-175083, and JP 09-54600. Applicant respectfully disagrees.

Applicant respectfully submits that the Examiner should initial the references because the concise explanation requirement for foreign references under 37 C.F.R. § 1.98(a)(3) has been satisfied. In particular, a concise explanation, the relevant portions of MPEP § 609 (page 600-122) states:

"Where the information listed is not in the English language, but cited in a search report or other action by a foreign patent office in a counterpart foreign application, the requirement for concise explanation of relevance can be satisfied by submitting an English-language version of the search report or action which indicates the degree of relevance found by the foreign office. This may be an explanation of which portion of the reference is particularly relevant, to which claims it applies, or merely an "X", "Y", or "A" indication on a search report."

With the Information Disclosure Statement filed on January 8, 2004, Applicant enclosed a copy of the Japanese Office Action with an English translation of the pertinent portions, which cited the filed references. As a result, it was improper for the Examiner not to initial the references.

Therefore, Applicant respectfully requests the Examiner to initial all of the references listed on Form PTO-SB/08 A & B. For Examiner's convenience, Form PTO/SB/08 A & B modified) as filed on January 8, 2004 with the PTO is enclosed.

II. Claim Objections

The Examiner objected to claim 6 for a minor typographical error. Applicant herein amends claim 6 and respectfully submits that claim 6 as now presented no longer includes the potential informality mentioned by the Examiner. Therefore, Applicant respectfully requests the Examiner to withdraw this objection to claim 6.

III. Claim Rejections under 35 U.S.C. § 112

The Examiner rejected claim 3 under section 112, second paragraph. Applicant respectfully thanks the Examiner for pointing out, with particularity, the aspects of the claim thought to be indefinite. Applicant respectfully requests the Examiner to withdraw this rejection in view of the self-explanatory claim amendment being made herein.

IV. Claim Rejections under 35 U.S.C. § 103

Claims 1-5 and 8-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over EP 1024477A1 to Ehara (hereinafter “Ehara”) in view of U.S. Patent No. 5,732,389 to Kroon et al. (hereinafter “Kroon”) and claims 6, 7, 13, and 14 as being unpatentable over Kroon in view of Ehara. Applicant respectfully traverses these rejections and respectfully requests the Examiner to reconsider these rejections in view of the comments, which follow.

Of these claims, only claims 1, 6, 8, and 13 are independent, the other rejected claims being dependent. This response focuses initially on the independent claims 1, 6, 8, and 13. Claim 1 recites a unique combination of features, including: “a smoothing circuit responsive to the spectral parameters and the excitation signal, for smoothing at least one of the spectral parameters and the level of the excitation signal, so as to output the spectral parameters and the

excitation signal where at least one is subjected to smoothing, ... the excitation signal calculating circuit, the smoothing circuit and the synthesis filter circuit operate only in compliance with predetermined conditions.”

The Examiner alleges that claim 1 is a speech decoder and is obvious over Ehara in view of Kroon. The Examiner alleges that the spectral parameter calculating unit and the smoothing circuit as set forth in claim 1 are equivalent to FFT processing section and the amplitude smoothing section as taught by Ehara and that the excitation signal calculating circuit and the synthesis filter as set forth in claim 1 are equivalent to Kroon’s inverse filter and synthesis filter. In addition, the Examiner alleges that the post-processing section of Ehara operates only in compliance to the modes and that one of ordinary skill in the art would have been motivated to include the two filters of Kroon into the post-processing section of Ehara in order to provide more natural sounding speech (page 4 of the Office Action).

Applicant has carefully studied the combined teachings of Ehara and Kroon, and Applicant respectfully submits that the combined teachings of Ehara and Kroon fail to teach or suggest at least the smoothing circuit as set forth in claim 1 and having the excitation signal calculating circuit, the smoothing circuit, and the synthesis filter circuit operate in compliance with only predetermined conditions.

Ehara teaches a post processing section used in the speech signal decoding apparatus. The post processing section provides mode selection switches, which determine whether to use voiced mode for voiced regions and unvoiced mode for unvoiced regions. In particular, Ehara teaches a post processing section having a weighted synthesis filter 701 receives decoded LPC

output from an LPC decoder. The FFT processing section 702 performs FFT processing on the weighting-processed decoded signal output from the weighted synthesis filter 701 and outputs spectral amplitude WSA_i to the first amplitude smoothing section 706. In addition, the FFT processing section 704 performs processing on the synthesized speech from the decoding section and outputs the spectral amplitude to mode selection switches. The mode selection switches judge whether the decoded signal is a speech region or a stationary noise. When the current region is the stationary noise, the switches turn on the first spectral amplitude smoothing section 706.

The spectral amplitude smoothing section 706 receives the spectral amplitude SA_i output from the FFT processing section 704 via a mode selection switch, and performs the smoothing processing on a signal component with a frequency determined by a first threshold and the weighted spectral amplitude WSA_i to output to another mode selection switch 707 (Fig. 7; col. 20, lines 21 to col. 21, lines 35). In Ehara, however, the spectral amplitude smoothing section 706 only outputs the smoothed SA_i to the mode selection switch 707 (col. 26, lines 45 to 56). That is, Ehara fails to teach or suggest the smoothing circuit that outputs the excitation signal and the spectral parameters. In Ehara, the smoothing section 706 only outputs smoothed spectral amplitude SA_i to the mode selection switch 707, whereas the inputted weighted spectral amplitude WSA_i is only used to determine on what frequency of the signal component to perform the smoothing process. In short, Ehara does not teach or suggest a smoothing section outputting the excitation signal and the spectral parameters.

Kroon does not cure the deficient teachings of Ehara. Kroon teaches a post-processing that consists of three functions: adaptive post-filtering, high-pass filtering, and signal up-scaling. The adaptive postfilter is the cascade of three filters: a pitch postfilter, a short-term postfilter, and a tilt compensation filter, followed by an adaptive gain control procedure. In particular, Kroon teaches the synthesis speech $s(n)$ is inverse filtered to produce the residual signal $r(n)$. The signal $r'(n)$ is used to compute the pitch delay T and a gain. The signal $r(n)$ is filtered through the pitch postfilter to produce the signal $r(n)$ which, in its turn, is filtered by the synthesis filter. Finally, the signal at the output of the synthesis filter is passed to the tilt compensation filter resulting in the postfiltered synthesis speech signal $sf(n)$. Adaptive gain control is then applied between $sf(n)$ and $s(n)$ resulting in the signal $sf'(n)$. The high-pass filtering and scaling operation operate on the postfiltered signal $sf'(n)$ (col. 29, lines 34 to 56).

Kroon does not cure the deficient teachings of Ehara in that it too fails to teach or suggest the smoothing circuit as set forth in claim 1. Moreover, Kroon fails to teach or suggest the filtering processes operating in compliance with only predetermined conditions. In Kroon, as explained herein above, the synthesis speech is inverse filtered to produce residual signal and the residual signal is filtered through the pitch postfilter, which is in turn filtered by the synthesis filter. Kroon fails to teach or suggest having the filtering on the basis of the spectral parameter or having the filtering operations performed in compliance with predetermined conditions.

The Examiner alleges that Ehara teaches the post-processing section operating in compliance with modes via mode switches (see page 4 of the Office Action). Applicant respectfully submits that Ehara only teaches that based on the mode certain spectral amplitude

smoothing section and random spectral phase generating section is selected. Ehara, however, fails to teach or suggest having an excitation calculating and the synthesis filter circuits operate in compliance with only predetermined conditions. That is, even if the two references are somehow combined, the resulting combination would not teach having the excitation calculating circuit and the synthesis filter performing their respective functions based on the spectral parameters, and operating in compliance with the predetermined conditions and having the smoothing circuit output both the spectral parameters and the excitation signal.

Therefore, “a smoothing circuit responsive to the spectral parameters and the excitation signal, for smoothing at least one of the spectral parameters and the level of the excitation signal, so as to output the spectral parameters and the excitation signal where at least one is subjected to smoothing, ... the excitation signal calculating circuit, the smoothing circuit and the synthesis filter circuit operate only in compliance with predetermined conditions,” as set forth in claim 1, are not taught or suggested by the combined teachings of Ehara and Kroon, which lack having the excitation circuit and the synthesis filter operate based on the spectrum parameters and in compliance with the predetermined conditions and having the smoothing circuit output both the spectral parameters and the excitation signal.

For at least these exemplary reasons, Applicant respectfully submits that the combined teachings of the references would not have (and could not have) led an artisan of ordinary skill in the art to achieve the subject matter of claim 1. Therefore, Applicant respectfully requests the Examiner to withdraw this rejection of claim 1. Claims 2-5 are patentable at least by virtue of their dependency on claim 1.

With respect to independent claim 6, it recites features similar to the features argued above with respect to claim 1. Namely, claim 6 recites: “an excitation signal calculating circuit for calculating an excitation signal and for obtaining a level of the excitation signal, on the basis of the reproduction speech signal and the spectral parameters calculated by the spectral parameter calculating circuit...a smoothing circuit responsive to the spectral parameters and the gain, for smoothing at least one of the spectral parameters and the gain, so as to output the spectral parameters and the excitation signal where at least one is subjected to smoothing.”

Applicant has already demonstrated that the combined teachings of Ehara and Kroon fail to teach or suggest the excitation signal calculating circuit and the smoothing circuit as set forth in claim 1. Since claim 6 contains features that are similar to the features argued above with respect to claim 1, those arguments are respectfully submitted to apply with equal force here. For at least some of the same reasons, therefore, Applicant respectfully requests the Examiner to withdraw this rejection of independent claim 6 and its dependent claim 7.

In addition, claim 6 recites: “a gain-calculating circuit for calculating a gain of at least one of the pitch prediction signal and the residual signal both output from the pitch-prediction circuit; and a synthesis filter circuit having a synthesis filter constructed with the spectrum parameters output from the smoothing circuit, the synthesis filter circuit produces a new excitation signal as a proper excitation signal on the basis of the gain, the pitch prediction signal and the residual signal, and thereby the synthesis filter synthesizes the proper excitation signal using the synthesis filter, so as to reproduce the speech signal.” The Examiner alleges that

Kroon teaches the synthesized filter as set forth in claim 6 (see page 7 of the Office Action).

Applicant respectfully disagrees.

Kroon only teaches that the signal $r(n)$ is filtered through the pitch postfilter to produce the signal $r(n)$ which, in its turn, is filtered by the synthesis filter. Finally, the signal at the output of the synthesis filter is passed to the tilt compensation filter resulting in the postfiltered synthesis speech signal $sf(n)$. Kroon, however, does not teach or suggest a synthesis filter being constructed with the spectrum parameters from the smoothing circuit to newly produce an excitation signal. In fact, there is no teaching or suggestion of the spectral parameters in Kroon.

Ehara only teaches the spectral amplitude smoothing section 706 receiving the spectral amplitude SA_i output from the FFT processing section 704 via mode selection switch, and performing smoothing processing on a signal component with a frequency determined by a first threshold and the weighted spectral amplitude WSA_i to output to the mode selection switch 707 (Fig. 7; col. 20, lines 21 to col. 21, lines 35). In Ehara, however, the spectral amplitude smoothing section 706 only outputs the smoothed SA_i to the mode selection switch 707 (col. 26, lines 45 to 56). That is, Ehara fails to teach or suggest the smoothing circuit that outputs both the excitation signal and the spectral parameters. Moreover, the combined teachings of the references do not teach or suggest the synthesis filter constructed with the spectrum parameters output from the smoothing circuit to produce a new excitation signal as a proper excitation signal. In addition, Ehara fails to teach or suggest a gain calculating circuit. In fact, in Ehara there is no mention of the gain. In short, the combined teachings of Kroon and Ehara fail to teach or suggest a number of features of the independent claim 6. For at least these additional

exemplary reasons, Applicant respectfully requests the Examiner to withdraw this rejection of claim 6 and its dependent claim 7.

Claims 8 and 13 recite features similar to the features argued above with respect to claims 1 and 6, respectively. Since claims 8 and 13 contain features that are similar to the features argued above with respect to claims 1 and 6, respectively, those arguments are respectfully submitted to apply with equal force here. For at least substantially the same reasons, therefore, Applicants respectfully request the Examiner to withdraw this rejection of independent claims 8 and 13 and their respective dependent claims 9-12 and 14.

Conclusion


In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

Amendment under 37 C.F.R. § 1.111
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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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